

22, 28 and 30 in 180° arcs, tends to optimize the cleaning of the pool. This occurs because the heads 20, 22, 28 and 30 do not operate to blow debris back toward the heads 16, 18, 24 and 26. This improves the efficiency and cleaning action of the in-floor cleaning system employing a combination of 360° and 180° heads oriented as shown in FIG. 4.

While the suction returns connected to the suction inlet of the pump 36 have been described primarily in conjunction with a floor drain 12, it should be noted that the system also may be used with pools which do not connect a floor drain to the suction inlet of the pump. This use of the term "suction inlet" is intended to cover such pool systems.

The foregoing description of the preferred embodiment of the invention should be considered as illustrative and not as limiting. Various changes will occur to those skilled in the art for performing substantially the same function, in substantially the same way, to achieve substantially the same result, without departing from the true scope of the invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A cleaning system for swimming pools including in combination:
a recirculating pump system having a suction water inlet and a water outlet;

a pool having first and second ends and a bottom;
a suction return in the bottom of the pool;
a connection between the suction return and the suction inlet of the recirculating pump system;

at least one first rotatable cleaning head in the bottom of the pool for cleaning in a 360° circle;

at least one second rotatable cleaning head in the bottom of the pool between the at least one first cleaning head and the suction return for

cleaning in substantially a 180° arc directed substantially toward the suction return; and

means connected between the water outlet of the recirculating pump system and the at least one first cleaning head and the at least one
5 second cleaning head for alternately delivering water from the outlet of the recirculating pump system to the at least one first cleaning head and the at least one second cleaning head.

2. The cleaning system according to claim 2 wherein the means for
10 alternately supplying water to the at least one first rotatable cleaning head and the at least one second rotatable cleaning head includes a water distribution valve.

3. The cleaning system according to claim 2 wherein the
15 recirculating pump system delivers water from the water outlet thereof to the at least one first rotatable cleaning head for a first predetermined period of time and supplies water to the at least one second rotatable cleaning head for a second predetermined period of time.

4. The cleaning system according to claim 3 wherein a plurality of
20 first rotatable cleaning heads are located in the bottom of the pool for indexed cleaning in a 360° circle.

5. The cleaning system according to claim 4 further including a
25 plurality of second rotatable cleaning heads in the bottom of the pool between each of the plurality of first rotatable cleaning heads and the suction return for cleaning in substantially a 180° arc directed toward the suction return.

6. The cleaning system according to claim 1 wherein the suction
30 return is a drain and further including at least one additional first rotatable cleaning head in the bottom of the pool for cleaning in a 360° circle; and

further including at least one additional second rotatable cleaning head in the bottom of the pool between the additional first cleaning head and the drain for cleaning a substantially a 180° arc directed substantially toward the drain;

5 wherein the water outlet of the recirculating pump system further is connected to the additional first and additional second cleaning heads for alternately delivering water from the outlet of the recirculating pump system to the additional first cleaning head and the additional second cleaning head.

10 7. The cleaning system according to claim 6 wherein the first rotatable cleaning heads are located near first and second opposite ends of the pool and the second rotatable cleaning heads are located intermediate the first rotatable cleaning heads and the drain of the pool.

15 8. The cleaning system according to claim 1 wherein a plurality of first rotatable cleaning heads are located in the bottom of the pool for indexed cleaning in a 360° circle.

20 9. The cleaning system according to claim 8 further including a plurality of second rotatable cleaning heads in the bottom of the pool between the plurality of first cleaning heads and the suction return in the pool for cleaning in substantially a 180° arc directed toward the suction return in the pool.

25 10. A method for cleaning swimming pools where a drain is located in the swimming pool and first and second cleaning heads also are located in the bottom of the pool between the one end of the pool and the drain, the method comprising the steps of:

30 operating the first cleaning head in the bottom of the pool to clean in a 360° circle;

 locating the second cleaning head between the first cleaning head and the drain; and

operating the second cleaning head in the bottom of the swimming pool to sweep debris substantially in a 180° arc directed away from the first cleaning head and toward the suction return of the pool.

5 11. The method according to claim 10 further including the step of operating the first and second cleaning heads in an alternating manner.

12. A cleaning system for swimming pools including in combination:

10 a recirculating pump system having a suction water inlet and a water outlet;

 a pool having a suction return;

 a connection between the suction return and the suction water inlet of the recirculating pump system;

15 at least one first rotatable cleaning head in the pool for cleaning in a substantially 360° circle;

 at least one second rotatable cleaning head in the pool between the at least one first cleaning head and the suction return for cleaning in substantially a part-circle arc directed substantially away from the at least one first cleaning head and directed substantially toward the suction return; and

20 means connected between the water outlet of the recirculating pump system and the at least one first cleaning head and the at least one second cleaning head for alternately delivering water from the outlet of the recirculating pump system to the at least one first cleaning head and the at least one second cleaning head.

25 13. The cleaning system according to claim 12 wherein said at least one second rotatable cleaning head indexes reversibly back-and-forth within said substantially part-circle arc.

30 14. The cleaning system according to claim 12 wherein the means for alternately supplying water to the at least one first rotatable cleaning head

and the at least one second rotatable cleaning head includes a water distribution valve.

15. The cleaning system according to claim 14 wherein the means for alternately supplying water to the at least one first rotatable cleaning head and the at least one second rotatable cleaning head further includes a programmable control for programmably selecting the period of time said at least one first and second rotatable cleaning heads are respectively supplied with water from the outlet of said recirculating pump system.

16. The cleaning system according to claim 12 wherein the recirculating pump system delivers water from the water outlet thereof to the at least one first rotatable cleaning head for a first predetermined period of time and then supplies water to the at least one second rotatable cleaning head for a second predetermined period of time.

17. The cleaning system according to claim 12 wherein said pool further includes a bottom, and further wherein said at least one first rotatable cleaning head and said at least one second rotatable cleaning head are located in said pool bottom.

18. The cleaning system according to claim 12 wherein said at least one first rotatable cleaning head comprises a plurality of first rotatable cleaning heads located in the pool each for indexed cleaning in a substantially 360° circle.

19. The cleaning system according to claim 18 wherein said at least one second rotatable cleaning head comprises a plurality of second rotatable cleaning heads located in the pool respectively between each of the plurality of first rotatable cleaning heads and the suction return for indexed cleaning in a substantially part-circle arc directed substantially away from the

associated one of said plurality of first cleaning heads and directed substantially toward the suction return.

5 20. The cleaning system of claim 19 wherein said pool further includes a bottom, and further wherein said plurality of first and second cleaning heads are located in said pool bottom.

10 21. The cleaning system of claim 20 wherein said suction return in located in said pool bottom.

15 22. The cleaning system according to claim 20 wherein the first rotatable cleaning heads are located near first and second opposite ends of the pool and the second rotatable cleaning heads are located intermediate the first rotatable cleaning heads and the suction return of the pool.

20 23. A method for cleaning swimming pools where a suction return is located in the swimming pool and first and second cleaning heads also are located in the pool between the one end of the pool and the suction return, the method comprising the steps of:

20 operating the first cleaning head to clean in a substantially 360° circle;

 locating the second cleaning head between the first cleaning head and the suction return; and

25 operating the second cleaning head to sweep debris substantially in a part-circle arc directed substantially away from the first cleaning head and directed substantially toward the suction return of the pool.

30 24. The method according to claim 23 further including the step of operating the first and second cleaning heads in an alternating manner.